Bacteria → Gm+ → Actinomycete → **Actinomyce**

* Anaerobic | No mycolic acid | Uniform Gm stain
* Low virulence
* Found in mucous membrane | Endogenous
* D: Grow on anaerobic conditions only | Colonies: white → yellowish | No hyphael growth | No “sulfur-granules”
* Clinical Implications
  + Cervicofacial (50-70%) | Thoracic (15-20%) | Abd/Pelvis (10-20%) | Cut/SubQ -mycetoma | Brain Absces
  + Farmer’s Lung
    - Hypersensitivity pneumonitis | Reactivity to Actinomyces propagates a Type III hypersensitivity
    - Acute – after large exposure | Subacute | Chronic – Extended exposure
    - ~20% mortality within 5 years
* T: Penicillin (6 mo – 1 yr) | Drain or debride if necessary

Bacteria → Gm+ → Actinomycete → **Nocardia**

* Aerobic | Mycolic Acid Present | Bleeding Gm stain pattern
* Found in external environment | Exogenous
* D: Grows on most media | Colonies: white → orange | Hyphae protrudes into air
* Clinical Implications
  + Pulmonary Disease | Brain Abscess (30%) | Primary Cut. Infection | SubQ inf – mycetoma
* Pathophysiology
  + Cord factor → prevents phagosome and lysosome fusion
  + Prevents phagolysosome acidification
  + Protect from toxic O2 metabolites
  + Avoid acid-phosphate-mediated killing
* T: 6 weeks | Local – Trimethoprim-sulfamethoxazole | Disseminated – Combined drugs